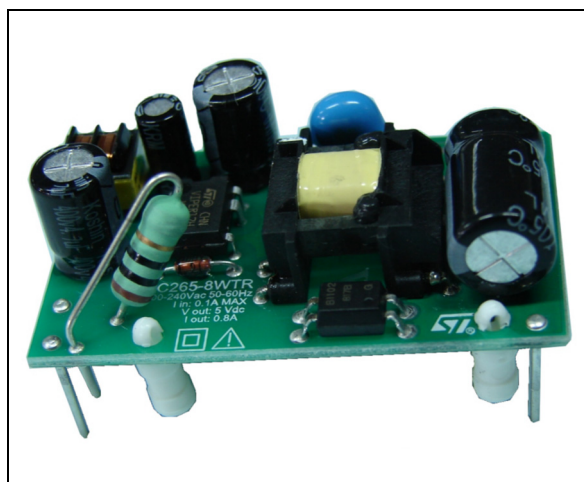


### Features

- Open frame switch mode power supply
- European input voltage range
- Single output 5 V, 8 W peak power, 4 W continuous operating mode
- EMC compliance according to EU directive EN55011, and EN55022 Class-B
- Harmon. current compliance to EN61000-3-2-3
- EMS immunity compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN60601-1-2, and EN61204-3
- Safety compliance according to UL60601-1, TUV EN60601-1, IE60601-1, and EN60950-1
- CE approval files. Report reference number: 165170-1TRFEMC, 165170-2TRFEMC, 165170-TRFSAF, 165170-1TRFSAF
- Input fuse protection
- Voltage and current regulation
- Output short-circuit protection
- Low standby power consumption
- MTBF 175000 hours at 40 °C max. load according to MILHDBK217E
- RoHS compliant
- Operating temperature range -30 °C to 70 °C

### Applications

- Telecom and industrial systems
- Distributed power systems
- Medical safety systems



### Description

ST's power modules are highly integrated, high efficiency switch mode converters. The SPAC265 family of converters includes isolated AC-DC, single output modules. The module can operate in accordance with the European input voltage range. It's a turnkey drop-in solution requiring no additional external circuitry. This specific version performs 8 W peak output power at 5 Vdc. It can support 800 mA output current in continuous mode, and can withstand 1.75 A peak 25% of the time.

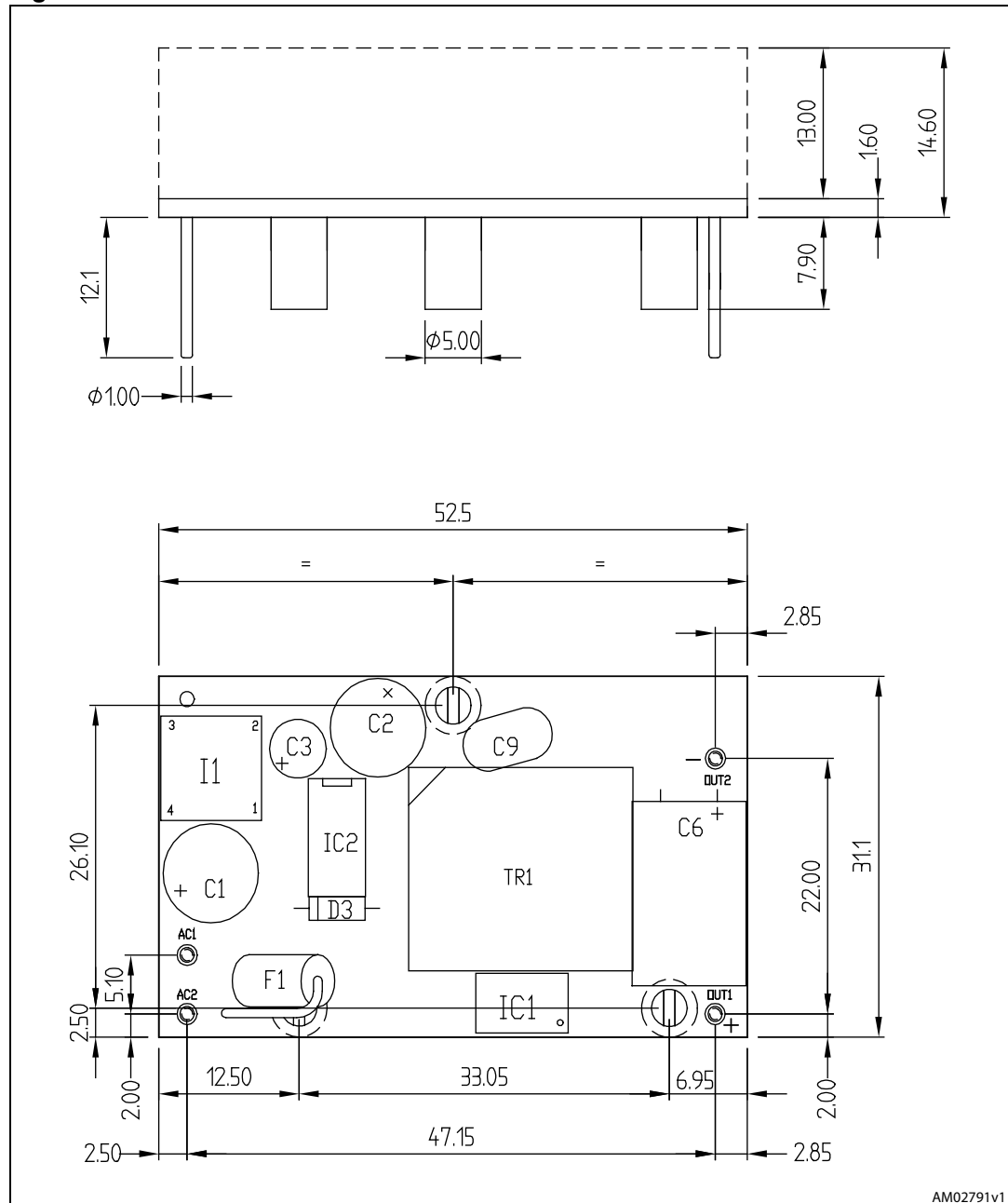
**Table 1. Device summary**

| Order code | Output power |
|------------|--------------|
| SPAC265-8W | 8 W peak     |

# 1 Pin settings

## 1.1 Pin connection and mechanical data (dimensions in mm)

Figure 1. Pin connection



## 1.2 Pin description

**Table 2. Pin description**



| Name | Function        | Description                   |
|------|-----------------|-------------------------------|
| AC1  | Line connection | Input voltage Vi main supply  |
| AC2  | Line connection | Input voltage Vi main supply  |
| OUT1 | Vdc output      | Output voltage 5.0 Vdc +/- 5% |
| OUT2 | Ground          | Output voltage ground GND     |

## 2 Thermal data

**Table 3. Thermal data**

| Symbol           | Parameter                           | Value       | Unit |
|------------------|-------------------------------------|-------------|------|
| T <sub>STG</sub> | Storage temperature range           | -40 to +105 | °C   |
| T <sub>OP</sub>  | Operating temperature range         | -30 to +70  | °C   |
| Hw               | Working humidity (non-condensing)   | 10 to 90    | Rh%  |
| Hs               | Storage humidity                    | 10 to 95    | Rh%  |
| Ps               | Storage and transportation pressure | 1.016       | hPa  |
| H                | Altitude                            | <2.000      | m    |

### 3 Label description and safety requirements

-  Double insulation primary to secondary side.
-  Attention: Read carefully the datasheet safety note.

#### 3.1 Safety note:

The SPAC265-8W is not provided with the disconnection tools from the main. The final application must include this item having the following characteristics:

1. On equipment suitable for application to overvoltage category 2 the minimum distance between the electrical contacts must be 3 mm.
2. The equipment suitable for application to overvoltage category 4 must comply with the IEC60947-1 norm.

## 4 Electrical characteristics

**Table 4. Electrical characteristics**

| Symbol     | Parameter                               | Test condition  | Min. | Typ. | Max. | Unit             |
|------------|---|---|------|------|------|------------------|
| $V_i$      | Input voltage                           | 50 Hz +/- 10%   | 184  |      | 264  | V <sub>rms</sub> |
| $I_o$      | Output current                          | $V_i = 184$ to 264 Vac current limitation condition <sup>(1)</sup>                  | 1.75 |      | 2.0  | A                |
| $I_{om}$   | Output current                          | $V_i = 184$ to 264 Vac minimum load for continuous operation mode                   |      | 20   |      | mA               |
| $V_o$      | Output voltage                          | $V_i = 184$ to 264 Vac,<br>$I_o = 0$ to $I_{max}$                                   | 4.75 | 5.0  | 5.25 | V                |
| $V_{or}$   | Output ripple                           | $V_i = 184$ to 264 Vac<br>$I_o = \text{max. load, with external LC}$ <sup>(2)</sup> |      |      | 50   | mV <sub>pp</sub> |
| $I_{osc}$  | Output short-circuit current            | $V_i = 184$ to 264 Vac Hiccup mode – $V_{out} < 1$ V                                |      | 2.5  |      | A                |
| $\eta$     | Efficiency                              | $V_i = 184$ to 264 Vac $P_o = 2$ W, $V_i = 230$ V <sub>ac</sub>                     | 70   |      |      | %                |
| $P_{stby}$ | Power consumption in no load conditions | $V_i = 230$ V <sub>RMS</sub> , $I_o = 0$ mA   |      |      | 300  | mW               |
| $V_{is}$   | Isolation voltage                       | Input to output   | 3000 |      |      | V <sub>RMS</sub> |
| $T_{op}$   | Operating ambient temperature           |   | -30  |      | +70  | °C               |
| $R_{is}$   | Isolation resistance                    | Input to output, 500 Vdc  | 100  |      |      | MΩ               |
| $Wh$       | Working humidity                        | Non-condensing  | 10   |      | 90   | %                |
| Life       | Life time                               | Max. load, 40 °C,   | 20   |      |      | Years            |
| MTBF       | Mean time before failure                | Max. load, 40 °C, MILHDBK217E   | 175  |      |      | Khours           |

1. The module can perform 1.75 A output current with 25% duty cycle, for time <10 sec at  $V_i = 184$  to 264 Vac. The module can perform 0.8A output current in continuous mode.

2.  $L = 1$  mH;  $C = 1000$  μF low ESR.

## 5 Soldering

The module is a THT component designed to be assembled on a motherboard with double wave soldering process.

## 6 Electromagnetic compatibility

This section contains specific information about the conformity of the device according to the Standard IEC 60601-1-2: 2001 + A1:2006.

The SPAC265-8W is a medical device that requires special precautions regarding electromagnetic compatibility and must be installed and used in accordance with the EMC information contained in [Table 5](#) below.

Portable and mobile radio communication, mobile telephones, and pagers can interfere with the operation of the medical device.

The use of accessories, transducers and cables other than those specified, with the exception of transducers and cables sold by the manufacturer of the device and the system as alternatives, can result in an increase of the emissions or in a reduction of the immunity of the device or system.

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**Warning:** The SPAC265-8W is intended for use in the electromagnetic environment specified below. The customer or the user of the SPAC265-8W should assure that it is used in such an environment

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**Table 5. Guidance and manufacturer's declaration of electromagnetic emissions**

| Emission test  | Compliance | Electromagnetic environment - guidance  |
|--|------------|---|
| RF emission<br>CISPR11                                 | Group 1    | The SPAC265-8W uses RF energy only for its internal function. Therefore its RF emissions are very low and not likely to cause any interference in nearby electronic equipment   |
| RF emission  | Class-B    | The SPAC265-8W is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emission IEC 61000-3-2                        | Class-A    |   |
| Voltage fluctuations/flicker emission<br>IEC 61000-3-3 | Complies   |   |

**Table 6. Guidance and manufacturer's declaration of electromagnetic immunity**

| Immunity test   | IEC 60601 test level   | Compliance level                         | Electromagnetic environment - guide  |
|---|--|--|--|
| Electrostatic discharge (ESD)<br>IEC61000-4-2                           | ±6 kV contact  | The SPAC265-8W doesn't change its state. | Floor should be concrete, wood or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%. |
| Electrical fast transient/burst<br>IEC61000-4-4                         | ±2 kV power supply   | The SPAC265-8W doesn't change its state. | --   |
| Surge<br>IEC61000-4-5   | ±1 kV differential mode  | The SPAC265-8W doesn't change its state. | --   |
| Voltage dips, short interruption and voltage variation<br>IEC61000-4-11 | <5% $U_T$ (>95% dip in $U_T$ ) for 0,5 cycles<br>40% $U_T$ (60% dip in $U_T$ ) for 5 cycles<br>70% $U_T$ (30% dip in $U_T$ ) for 25 cycles<br><5% $U_T$ (>95% dip in $U_T$ ) for 5 s | --                                       |  |
| Power frequency (50/60 Hz) magnetic field<br>IEC61000-4-8               | 3 A/m  | The SPAC265-8W doesn't change its state. | Power frequency magnetic fields should be at a level characteristic of a typical location in a typical commercial or hospital environment    |

## 7 Revision history

**Table 7. Document revision history**

| Date        | Revision | Changes         |
|-------------|----------|-----------------|
| 06-Jun-2012 | 1        | Initial release |



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